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## **The Level of Community Participation in Tsunami Disaster Management in Pandeglang District, West Java, Indonesia**

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**Abstract.** Currently, the biggest incidence of disasters caused 426 people's death in West Java is tsunami in the coast of Sunda Strait. One of the causes is unsuitable coastal layout managements. The participation of community in disaster management is needed to accelerate the recovery situation. The purpose of this study is to determine the level of the Pandeglang's community participation in recovering tsunami disasters. The method of the research is qualitative with description design. The results are the communities of Pandeglang District, the village's head and the district's head had had the collaboration how to involve the participation in disaster management of tsunami disaster starting from: 1) preparedness and mitigation program were starting from making planning program until finishing it, at the pre-disaster period; 2) communities have participated in making post commands, helping in evacuation of the disaster's victims and distributing many kinds of relief materials to the disaster's victims actively at the emergency response response; 3) most of the disaster's victims had collaborated to occupy the temporarily shelters and followed the back to normal life programs, at the post disaster period. Although the participation of Pandeglang community was not going as well as the Pandeglang Administration's District suggestions, but the important thing is most of them had participated actively. The conclusions of this research are: 1) the community participated and embroiled on the pre-disaster period, emergency response, and post-disaster period; 2) the level of the community's participation in Pandeglang District had achieved on acting together levels.

**Keywords:** Community Participation, Disaster Management, Tsunami Disasters .

### **1. Introduction**

A disaster is an occurrence disrupting the normal conditions of existence and causing a level of suffering that exceeds the capacity of adjustment of the affected community (WHO, 2002).

According to Law of The Republic of Indonesia Number 24 of 2007 concerning disaster management, disaster shall mean an event or a series of events threatening and disturbing the community life and livelihood, caused by natural and/or non-natural as well as human factors resulting in human fatalities, environmental damage, loss of material possessions, and psychological impact. According to Yamamoto (2006), what needs to be underlined is a major disaster threatening people's livelihoods, health and life generally.

Furthermore, Natural disaster shall mean an event or a series of events caused by nature such as earthquake, tsunami, volcanic eruption, flood, drought, typhoon, and landslide, that often occur suddenly or could not be expected (Law of the Republic No. 24 of 2007). One of the natural disasters resulted in large casualties and properties, is an earthquake followed by a tsunami. The cause of the tsunami disaster was more than 90% of earthquakes in the sea, and only 9% was caused by the volcano's eruption, and about 1% due to landslides. Therefore, Indonesia is one of the countries categorized as disaster-prone (Sutopo, 2018).

The tsunami disaster that became a major disaster in Indonesia was on December 26 in Aceh and North Sumatra, more than 16.080 people died, 6.245 people missed and 2.507 injured (Media Center, National Information Institute, NU Online, 2005). Then the earthquake was followed by the tsunami on 28 September 2018 in Palu and Donggala, Central Sulawesi Province, which resulted in 2.113 people dying, 2.010 people missing, and 4.612 people injured, and 6.632 damage buildings (BMKG, 2018). The last natural disaster was caused by the eruption of Anak Krakatau Volcano occurred on December 22, 2018, in the Sunda Strait, Pandeglang District, Banten Province, resulted in 437 people died, 1.495 people injured and 159 missing (Sutopo, 2018).

The success of the implementation of tsunami disaster management can not be separated from the Pentahelix's contribution consisting of the government, society, universities, private personals, private institutions and mass media. The disaster management of Tsunami in Pandeglang District was included all the periods, such as pre-disaster activities (mitigation and preparedness), emergency response, and post-disaster which is as consistent as the Paton & McClure's findings (2013) that community members can become partners for the government in making decisions of mitigation implementations, preparedness, emergency response response and disaster recovery. On the other hand, disaster management will fail while the community's involvement does not get in, because the disaster management has to consider knowledge, experiences, interests, values, priorities and preferences or local wisdom (Bird et al. 2010).

A community involvement in disaster management of tsunami in Pandeglang District is carried out by the government, private and educational institutions. Based on the results of an interview with one of Regional Disaster Management Agency's officers (BPBD) of Pandeglang District, it has several obstacles in the community's involvements such as how to gather the community in deliberation of village development plans, so that the government's programs on disaster management can be implemented by the community. In addition, the results of disaster's victim interviews stated that he felt that the governments did not keep as well as the promise to fulfill the needs of life after the disaster.

Based on the explanation above, it shows an impression that the participation of Pandeglang community was not as accordance as expected. Therefore, to prove and measure the implementation of community's participation in Pandeglang District on the disaster management of tsunami starting from the pre-disaster, emergency response and post-disaster periods, so that the further research is necessary.

## 2. Research Purposes

The purpose details of the research are as the following:

- a. To analyze the community's participation on the disaster management period of tsunami.
- b. To analyze the level of community's participation in Pandeglang District on the disaster management period of tsunami starting from the pre-disaster, emergency response and post-disaster periods.

## 3. Research Methodology

This research uses qualitative methods through the descriptive design. This method was chosen to identify description of the level of community participation in Pandenglang District on the disaster management of tsunami. Data collection was carried out through: a) interviews with selected samples (purposive samplings) such as BPBD secretaries, the heads of sub-districts, the representatives of village heads, representatives of community leaders, and community's representatives; b) field observations; and c) documentations. The analysis was carried out using the theory of Miles and Hubermans (2014) which includes data collections, data condensations, data presentations and drawing conclusions.

## 4. Theoretical & Conceptual Framework

4.1. **Disaster Management** - According to Nurzanah et al (2012), the implementation of disaster management is an efforts series in determining development policies at disaster risks, disaster prevention activities, emergency responses and rehabilitations.

4.2. **Tsunami Disaster** - The term of Tsunami literally comes from Japanese, "Tsu" means a harbour and "Nami" is a wave. Tsunami can be interpreted generally as a large tide at the port. The difference between tsunami and waves (caused by wind) is the water movement. The waves can move the upper seawater, but tsunami moves the entire of water from the surface to the bottom. Furthermore, tsunami is a series of waves with a long wavelength and period (time between crests) that can vary from a few minutes to over an hour and it can occur at any time of day or night. It has several causes, one of them is the volcanic activity which happened on the Tsunami on December 22, 2018 in Pandeglang, Indonesia. Tsunami in Pandeglang District becomes a concern because one of the locations located in the western waters and directly facing the Anak Krakatau Volcano is very potentially vulnerable. The Tsunami triggered by the volcanic activity of Anak Krakatau Volcano, mountain avalanche material (Farahdita and Siagian, 2020). Due to the large amount of lava it affected three sub-districts: Labuan, Sumur, and Panimbang.

4.3. **Mitigation and Preparedness of Tsunami** - According to Law of the Republic of Indonesia Number 24 of 2007, Mitigation means a series of efforts to reduce disaster risk, through physical development as well as awareness and improved capability to face disaster threat and to reduce disaster risk for community in disaster-prone areas. Disaster mitigation is an activity or efforts to reduce the disaster impacts, the victims (both lives and properties).

The steps can be carried out tsunami mitigation are: 1) keeping on guard to the tsunami signs, one of them is an earthquake that can be felt on the beach, sudden low tide, visual observation and rumbling sounds; and 2) knowing the Early Warning System's functions, DART (Deep Ocean Assessment and Reporting of Tsunami) type is often used.

Some preparedness had been taken are: 1) making the disaster-prone maps and disseminating it to local government and community; 2) counselling, educating, training and monitoring the implementation of the preparedness to the community; 3) applying the *Green*

Belt as the natural progression through planting mangrove trees in the shorelines and coconut trees along the coast tightly; 4) building the breakwater as the artificial protection around the beach, 100-200 meters from the beach; 5) arranging the spatial and land used on the coast; and 6) constructing the evacuation facilities and routes around the coast guiding the community to the safer area, for example to the hill or mountain is out of the tsunami waves reached.

**4.4. Community Participation** - According to Mikkelsen (2005), giving an understanding of community participation is the participation or involvement of the community in the process of identifying problems, identifying potential in the community, selecting and making alternative solutions to solve the problems, implementations, and evaluations. According to Alyudin (2005), important things that can be taken as important values with community participation in disaster management programs, are mobilizing community solidarity spontaneously and massively, arousing social awareness and universal basic human values, establishing a form of sacrifice for the sake of humanity, arousing the spirit of creativity in the community, and fostering togetherness between parties. Meanwhile, according to Sumardjan (2019) people are people who live together and produce a culture.

## **5. Results and Discussion**

The participation of the Pandeglang District community in tsunami disaster management is in accordance with Perka BNPB number 4 of 2008 concerning Guidelines for Preparing Disaster Management Plans, which includes the establishment of development policies at risk of disasters, disaster prevention activities, emergency responses, and rehabilitations. In this study, community participation is able to be observed starting from the pre-disaster periods, transition periods, emergency responses and the post-disaster, so that the level of participation can be assessed. The researchers identified the level of community participation obtained from the range interviews from BPBD officials of Pandeglang District, Carita Sub-District, Labuan District Head, Panimbang District Head, community leaders and affected communities to find the results out.

The results of research on the level of community participation are:

### **a. Community participation according to the periods of disaster management.**

#### **1) Pre-disaster**

Pre-disaster activities consist of absorbing people's aspirations for disaster preventions, mitigations and preparedness. The Regional Government of Pandeglang District accommodates the aspirations of the community by providing a forum for developing deliberations (Musrembang) concerning the disaster management. Musrembang is carried out in periods starting from the subdistrict village to the district government. Public input will be discussed by the local government, such as Regional Government, DPRD, and related agencies, in this case the BPBD.

Concerning Musrembang facility has confirmed by the Secretary of BPBD and the village heads of three sub-districts ( Panimbang, Labuan and Carita).

*"Musrembang involves the community leaders, from the tiniest sectors, such as village, sub-district, and the district, even some suggestions are not be able to be accepted due to the administration problems (priority scale of government and fee)"*.

Disaster prevention and mitigation activities have also been carried out by the community by following the instructions of the Pandeglang District BPBD not to build



houses or villas or stalls on the beach starting from Carita, Labuan, to Panimbang including Tanjung Lesung. This is the following evidence that the community has participated in the prevention and mitigation of the tsunami disaster on Carita beach by community leaders and the Head of Carita Sub-district, Labuan. It has been confirmed by the Head of Panimbang and the Carita District Secretary.

*"(the construction permit) is only 'the green zone' (which is the government allowed building houses), and the government has prohibited building houses in the red zone".*

Preparedness activities have been carried out by BPBD of Pandeglang District and initiated by community leaders and the village head as well. The implementation of tsunami preparedness training was carried out comprehensively by the BPBD as explained by the Secretary of BPBD Pandeglang District. Evidence that the community's seriousness in participating in preparedness activities was stated by the Carita District Secretary:

*"BPBD has carried out the drills, practices, trainings to deal with disasters, for example to run according to the designated evacuation route. The coast community of 6 villages has been trained. "*

## 2) Emergency Response

Emergency response activities had been carried out related to community participation during the emergency responses are as the following:

The community has to participate and understand the signs of tsunami, such as a roar in the sea. The signs will be delivered to the village's head and the sub-district head. The sub-district head immediately coordinated with the BPBD and the Regional Government of Pandeglang, including the Provincial Government in this case the provincial BPBD to immediately sound an alert or alarm. However, the initial signs of a tsunami were not there, it is an earthquake. For this reason, the Provincial BPBD ordered the development of a tsunami disaster. This community participation was stated by the Carita District Secretary, the Labuan District Head, and the Panimbang District Head:

*"The requirements to sound an alarm if an earthquake occurs, wait 15 minutes at low tide, is there an increase in the tide or not. The Provincial BPBD has the right to sound the alarm with the approval of BMKG and BNPB. At that time, I had coordinated with the Provincial BPBD but they said no".*

The condition of the provincial BPBD was lack of courage to sound the alarms, due to the absence of an earthquake. This also made people confused, because there are no domestic animals running as a sign of a tsunami, so that the people of Carita, Labuan and Panimbang call it as the secret Tsunami or Silent tsunami, as well as stated by the community leaders of Labuan and the people of Carita:

*"During the tsunami the alarm was not sounded for fear that the public would panic. Yesterday there was no earthquake so we thought it was a regular wave. If we looked at the cats, usually while the earthquake followed by a tsunami, the cats, cows and buffalos will definitely run away".*

In emergency responses, the community participation was showed through the gathering in building the posts at the sub-district office as well as the Carita District Head, Panimbang and Labuan District Heads said:

*"In the fact, the sub-district office became a post for sheltering the tsunami disaster by discussing and dealing it with the residents".*

The other community participations in the emergency response are the self-helps ability and the others-helps ability to evacuate according to the path that has been determined during the preparedness training and the shelter for the victims as well as the community leaders of Labuan stated:

*"I told the people who went to sea to immediately run to the Command Post office of the sub-district head, many survived, except for a mother and child who were trapped at home and could not get out, eventually joining the flow. I myself was afraid to see high waves. I immediately ran to the sub-district office".*

### 3) Post-Disaster

Community participation in the post-disaster period includes as the following: Providing suggestions to the village head and the sub-district head on post-disaster (rehabilitation and reconstruction). The suggestions concerned rearranging the spatial beach that damaged many houses and tourism buildings, prohibiting the construction on the beach, preventing sea waves from entering people's housing, and building the permanent housing. The results of the suggestions are forwarded to the Regional Government of Pandeglang District as well as the Carita District Head, the Labuan District Head and the Panimbang District Head said:

*"We are invited to discuss it in the district, Sir. The village was also invited to the spatial planning events, the sub-district head representing Carita sub-district attended.*

The other community participation is following the government's recommendation to occupy temporary shelters (huntara) that have been prepared for victims whose houses are being damaged, severely damaged or missing. Most residents do not want to move to temporary shelters because they are far from the beach, which is the location of people's livelihoods. For this reason, community leaders and the Social Service Office came directly to the post so that the victims would want to occupy temporary shelters on the promise of providing social security. The people finally wanted to live in shelters, even though it was a little bit hard as well as the resident of M said:

*"In the past, he offered us if we entered the Huntara immediately, we would get a guarantee of life, but in the end it turned out that the promises are just the promises"*

Another community participation in sustaining their life by restoring livelihoods was giving the advices to the sub-district head, so the community who are mostly fishermen, was given assistances to build boats to go to the sea again. As for the people who are used trading on the beach, they should be allowed to sell again immediately, considering that the Social Service has not provided the life insurance



to them as well as “M” as the resident and “T” as the community leaders from Labuan and Panimbang sub-districts said:

*"If we didn't sell immediately, what we could eat, sir, in the end we discussed the village head so he can sell at night on the beach. It turns out that I can, thank God. This includes fishermen friends who are also desperate to go to sea again because there is nothing to eat. Friends also ask for help so that they can borrow a boat from the village or sub-district head so they can find fish again".*

The sub-district heads welcomed the community's participation to live a better life and facilitated donors to get in touch with boat builders to order directly the size desired by the fishermen. This progress is like what the Head of Penimbang said in accepting the aspirations of the fishermen community to donate in the form of boats:

*"We connect it with those who make ships so that BUMNs directly order the same message that makes them cooperate with each other, we just need to accept it cleanly and share it (with fishermen)".*

The community's participation in beach reconstruction by installing a breakwater wall carried out by the central government is so as not to disturb the habits of the people who believe that bathing on the shore of Labuan beach is able to cure certain diseases and not disturb or change the position of the tomb of Sheikh Nawawi. This public aspiration was accepted by the government so that the kyai nawawi place to eat was not changed and created a gap of about 20 meters between the breakwater walls which allowed the people of the Pandeglang area to perform ritual bathing for healing and recreation.

### **b. Community Participation Assessment**

This research shows that the Pandeglang people generally understand the importance of community participation in disaster management programs, as one of the forms of spontaneous and massive community solidarity and arousing social awareness for good community life (Alyudin, 2005). To get the level of participation of the Pandeglang community in supporting tsunami disaster management, it can be assessed as following:

- 1) In the pre-disaster period, several disaster management planning activities have been carried out both before the disaster and after the disaster to support community participation, the government accommodates by forming development planning deliberations or musrembang activities, starting from the Village to the District to the Head of Service and channeled to the Regional Government (Regent and DPRD). The implementation of musrembang from 3 districts in Pandeglang District has been carried out well. This is consistent with the findings of Pearce (2003), recognizing the importance of community involvement in disaster emergency response planning, including equal treatment of participation in making decision on mitigation, preparedness, emergency response and recovery.

However, enforcing disaster prevention regulations there are obstacles, especially old policy decisions that are difficult to change, even not in accordance with current developments. Especially, the policies that have to be dealt with the authorities at the regional and central government levels. For example, the establishment of hotels and villas for recreation along Carita Beach to Tanjung



Lesung is a central government program whose authority is no longer at the district level.

The pre-disaster phase activities that have been carried out are the implementation of disaster mitigation in the form of a prohibition on the construction of new buildings around the coast by the community and all stakeholders. The local community already understands that it is not permissible to build houses on the beach, so when the tsunami disaster struck, many victims were building owners and tourists, where they were migrants, while local residents made houses fell from the beach. This is consistent with the findings of Phillips et al. (2011) states that people who have good knowledge must be accommodated and absorbed.

Preparedness activities have also been trained on how to recognize the arrival of a tsunami disaster, even including the sounding of an alarm for early warning and how to evacuate and support others. However, because the 2019 tsunami was not accompanied by an earthquake, the community did not expect a tsunami to come, and they called it a silent tsunami.

From pre-disaster community participation contains: being able to provide suggestions and suggestions in disaster management planning such as disaster prevention, mitigation and preparedness that are accepted by the government. It is evident that the implementation of preparedness training is well understood by the community.

- 2) The ability of the community and officials at the village and sub-district level to respond to signs of a tsunami disaster is in accordance with the procedures they received during the training in preparedness. Adherence to procedures is proof that the Pandeglang community fully understands the tsunami and appreciates BPBD officers who trained them. This was demonstrated by the community knowing very well the nature and shape or natural signs of a tsunami disaster. Natural signs of a tsunami are preceded by an earthquake, rising sea waves, the behavior of pets running from the cage, and when to sound a disaster emergency response signal or alarm, and spread a tsunami, and evacuate according to the signs that have been installed.

However, community participation in providing advice to the Provincial and District Governments to sound an alarm as a sign of a tsunami disaster was ignored, because there was no earthquake to open a tsunami. In this case the local government did not deliberate and respond to the aspirations of the community to immediately concerning to the alarm because they thought there was no earthquake. This condition according to Pearce (2003) shows that if the community is not involved in making decisions in an emergency response, it will cause problems in providing assistance during the emergency response response. As a result there was no readiness to escape from the tsunami and as a result, many victims died for migrants in the Carita Beach recreation area and Tanjung Lesung Beach as well as the natives on Labuhan Beach and Sumur Beach, even though the incident was at 9 am

With the training and monitoring on tsunami disaster preparedness throughout the Pandeglang coast, it has been very well accepted and implemented by the community. This can be proven from interviews with the community and community leaders and combined with the statements of 3 Heads of Sub-district that the community is very ready to face a tsunami disaster. This means that the aspirations of the community have been able to unify experiences, knowledge, interests, fears, values, concerns, priorities, choices and alternatives to add local wisdom values to the local community (Haynes et al, 2008).



In the establishment of an emergency response post there was an agreement between the community and the sub-district head before deciding the office to become a Post. The Post has the benefits to receive and distribute assistance from the Government of Pandeglang District and Banten Province as well as private donors or community organizations and companies. Given the position of the sub-district office on the side of the main road so that it is accessible for transportation and distribution the aid of the tsunami victims easily. This shows that the sub-district's head has been able to show participatory leadership attitudes that always ask for opinions from the population. This is in accordance with the findings of Rahman (2018) that the success of community participation in disaster management in Malaysia is supported by policy-making decisions that apply a combination of top-down and bottom-up and involving all stakeholders.

During the post-disaster period, there are rehabilitation activities where the Government invites disaster victims to join and occupy temporary shelters (shelters) which are not far from the coast. In addition, there is actually another goal when people participate in living in temporary shelters. The goal is to make it easy for the government to monitor the health of disaster victims and foster their next life so that they can return to normal. The community in temporary living shelters will facilitate the identification of community health evaluations and environmental management programs.

The complaints from some residents were actually caused by an inaccurate approach to the community, as stated by the Secretary of the BPBD Kabuupaten Pandeglang that the effective way to approach the community was to wear ordinary clothes, do not have official attributes, and discussions in stalls or other places. Relaxing with coffee and local food, the discussion goes without force and with a family atmosphere. The attention to this local culture that facilitated all pre-disaster, emergency response and post-disaster activities was well followed by the Pandeglang community. This situation is what Zahnd (1999) wants to pay attention to the character and uniqueness of society in making decisions regarding decisions related to community life itself.

Community involvement in the decision-making that occurs should be changed from a top down to a bottom up approach as a form of democratic governance (Dahuri, 2001). From the explanation above, it shows that the implementation of Pandeglang community participation for disaster management according to Pearce (2003) has been able to increase community awareness, accept better decisions, resolve conflicts or a way out of conflict situations, increase disaster preparedness, empower and self-resilience and community against the arrival of a disaster.

Based on the above description, the level of participation of the Pandeglang community during tsunami disaster relief in the pre-disaster, emergency response and post-disaster periods according to Wilcox (1994), includes: 1) conveying and channeling ideas and suggestions correctly; 2) the government accommodates and distributes and responds properly; 3) starting the community planning process to be actively involved; 4) government policy decision making incorporating public ideas and suggestions; 5) implementing of policies in the field is carried out jointly with the community while still in control of the government, especially in relation to finance and activity reports; 6) evaluation and reporting is carried out by the government with input from the public.

Thus, the level of participation of the Pandeglang community in tsunami disaster management is at the Acting together level. This level is marked by the existence of a

form of cooperation between the governments and the communities, suggestions and public input are accepted by the government so that the community contributes meaningfully in decision making. The community is also involved in activities in the field but all commands are from the government.

## 6. Conclusions

The conclusions in this study are:

- a) Regional Agency for Disaster Management (BPBD) of Pandeglang District has conducted preparedness training before the tsunami disaster occurred, so that the implementation of Pandeglang community participation is actively involved in tsunami disaster management at the pre-disaster period, the emergency response period, and the post-disaster period.
- b) The level of participation of the Pandeglang community in tsunami disaster management has reached the level of acting together, where participation starts from the planning process, implementation to evaluate, although in the evaluation process the role of the government is still dominant.

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